(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 August 2002 (01.08.2002)

PCT

(10) International Publication Number
WO 02/060199 A1

(51) International Patent Classification[7]: H04Q 7/22, H04M 15/00

(21) International Application Number: PCT/FI01/01153

(22) International Filing Date:
27 December 2001 (27.12.2001)

(25) Filing Language: Finnish

(26) Publication Language: English

(30) Priority Data:
20002893 29 December 2000 (29.12.2000) FI

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(81) Designated States *(national)*: AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

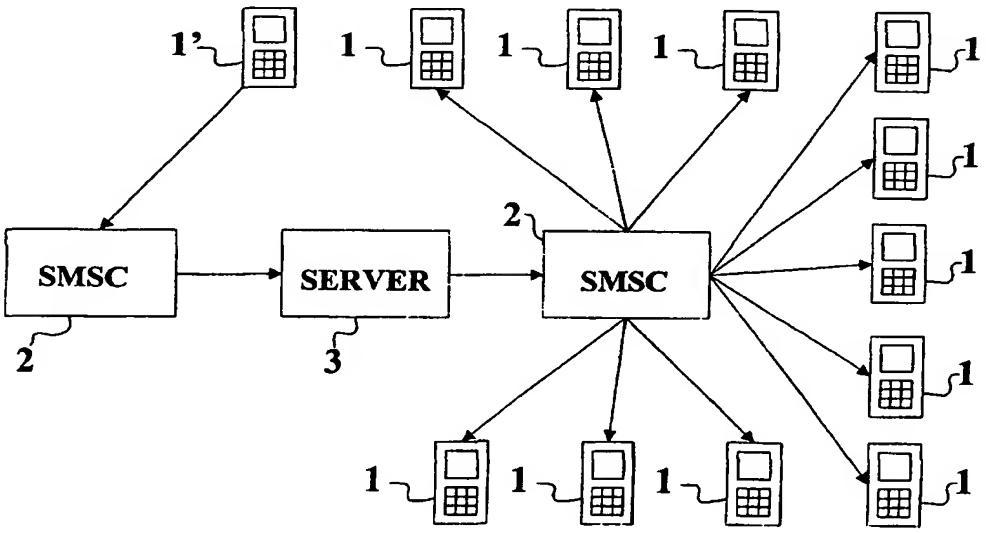
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**
— *with international search report*

(48) Date of publication of this corrected version:
24 December 2003

*[Continued on next page]*

(54) Title: METHOD FOR IMPLEMENTING A MESSAGING SERVICE BY MEANS OF A TELEPHONE NETWORK




(57) Abstract: This application discloses a method for implementing a message service with the aid of a telephone network, in which message service a message group consisting of at least three network addresses is defined. In the method, a message addressed to the message group is received and the received message is transmitted to the network addresses defined in the message group. According to the invention, the message is received through a message-group-specific telephone number, which unambiguously defines the message group that is the destination of the message. By means of the invention the advantage is achieved that the composition of the message group remains unified and that joining and leaving the message group take place more reliably than in known solutions.

WO 02/060199 A1

**(15) Information about Correction:**
see PCT Gazette No. 52/2003 of 24 December 2003, Section II

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

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**Published:**
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*[Continued on next page]*

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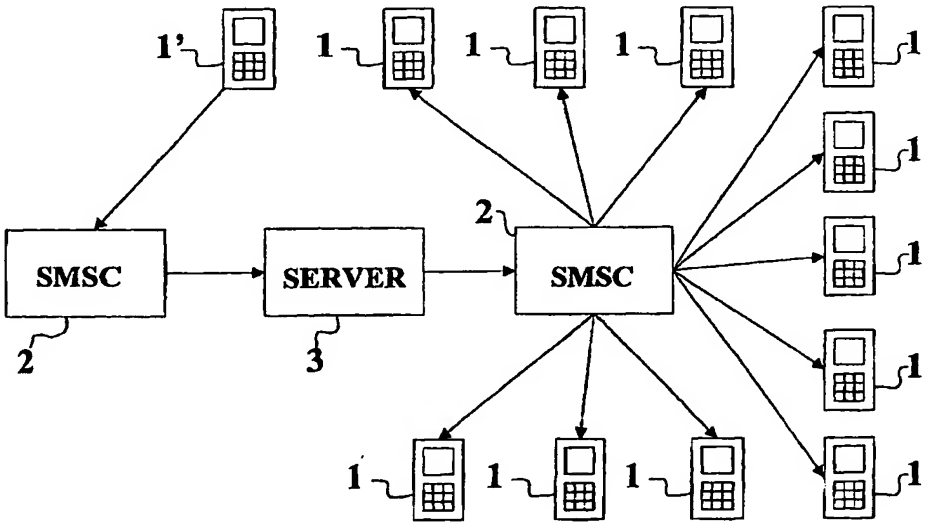


(57) **Abstract:** This application discloses a method for implementing a message service with the aid of a telephone network, in which message service a message group consisting of at least three network addresses is defined. In the method, a message addressed to the message group is received and the received message is transmitted to the network addresses defined in the message group. According to the invention, the message is received through a message-group-specific telephone number, which unambiguously defines the message group that is the destination of the message. By means of the invention the advantage is achieved that the composition of the message group remains unified and that joining and leaving the message group take place more reliably than in known solutions.

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# METHOD FOR IMPLEMENTING A MESSAGING SERVICE BY MEANS OF A TELEPHONE NETWORK

The present invention relates to a method, according to the preamble of Claim 1, for implementing a message service with the aid of a telephone network.

Methods of this kind are used in connection with message services, in which one message sent with the aid of a telephone network is transmitted to several recipients. In particular, these services are provided for mobile communications customers.

According to the state of the art, a mobile telephone in a GSM network can be used to send group messages to several recipients, with the aid of a service provided by the telecommunications operator. In Finland, at least Radiolinja Oy and Sonera Oyj provide such services. In Sonera Oyj's service, a GSM customer can themselves create a text message transmission group, by using certain commands, the group including GSM telephone numbers and e-mail addresses. The group is defined by sending, to a specific service number, one or several text messages, which contain predefined commands and the network addresses that it is wished to place on the list. After creating the group, the GSM customer can send a text message to the aforesaid service number, which begins with a command defining the service (in Sonera's service, 'RT') and continues with an identifier defined for the group. After this information comes the message desired by the customer. The system of the telephone network operator receives the sent message and performs the service defined at the start of the message, i.e. transmits the message to the network addresses attached to the group.

The known solution provides an excellent service for a customer, who wishes to send messages, for example announcements, mainly in one direction, to recipients defined as the members of a relatively small group. However, in the known solution, problems arise if the group is even slightly larger and if a discussion in more than one direction is desired within the group. This is because, in the known solution, each user must define their own group for sending their own messages. If the group participating in the discussion is even slightly larger, the problem arises of updating the transmission lists when the composition of the group changes. In practice, this leads to a situation in

which, when a new member joins the group, their address is defined in the transmission lists of only some users. Thus, some of the group's internal messages never reach the new users. Correspondingly, when a person tries to leave the group, the transmission lists of several other members of the group are not updated. Thus, the member leaving the group may receive random messages from members of the group for as long as that member's telephone number is valid.

The invention is intended to create a message service, in which the composition of the group remains unified and in which joining and leaving the group take place more reliably that in the known solution.

The invention is based on reserving a specific telephone number for each group, which refers to a specific unambiguously defined address group. The transmission of messages is arranged to take place through this group-specific telephone number, so that text messages being sent do not need to include separate commands or group identifiers. In the basic service, a text message sent to the group number is forwarded to all the addresses of the group, except the address from which the message in question was sent.

More specifically, the method according to the invention for implementing a message service is characterized by what is stated in the characterizing portion of Claim 1.

Considerable advantages are gained with the aid of the invention.

With the aid of the invention, a person joining the group automatically receives all the messages sent to the group subsequent to their joining, as all the messages sent to the group travel through the same group definition. Correspondingly, when a former member leaves the group, the member's telephone number or e-mail address does not remain unnecessarily on the transmission lists of individual members. Further, the additional advantage is achieved that the message portion of the text message need not include commands or group identifiers, allowing several more letter characters to be included in the actual message being sent.

The invention also has many preferred embodiments, by means of which still more

advantages are obtained.

The invention permits, for example, group members to temporarily remove themselves from the transmission list. This may be required, for example, during holidays or when travelling abroad. A group member can then receive normally text messages addressed to them personally, while messages coming through group transmissions, however, do not arrive. Such a temporary removal from a group is not, in practice, possible in the known solution described above. In the known solution, this would require each member of the group to first remove the telephone number from their own transmission list and then, after an interval to define it in the list again. Temporary removal from the group may have, however, a considerable financial significance, if a member of the group spends time abroad. In the state of the art, the group member would have to pay reception charges for receiving the messages, due to their being abroad; even through the content of the messages was such as to be completely irrelevant to someone abroad.

Further, the invention permits versatile alternative forms of billing. For example, charging for the message service can be arranged in such a way that:

1) The sender pays a certain transmission charge for each message sent.

2) Each recipient pays a reception charge for each message received.

3) Each member of the group pays a monthly charge for belonging to the group.

Billing can also be implemented as a combination of the above ways, in the manner most suitable to the nature of each group. Further, the sending of a message could also entitle to a reduction in service charges. This could be appropriate, for example, in certain notification and hobby groups, such as birdwatchers' bird observation groups. In that case, a subscriber sending a notification message would be registered for a reduction in the telephone network operator's system and billing for the service would be carried out, for example, as a combination of the above methods 2) and 3). This example by itself demonstrates the flexibility of the method and the numerous possibilities relating to the services that can be implemented.

In the following, the invention is examined with the aid of examples and with reference to the accompanying drawings.

Figure 1 shows one possible system environment, in which the method according to the invention can be used.

Figure 2 shows one possible routine, which can be performed to transmit messages in a manner according to the invention.

Figure 1 shows terminals 1 and 1', short message service centres 2, and a server 3. One of the terminals is marked as the terminal 1' sending the message. The terminals 1 are terminals able to receive and record messages in data form. The term data form refers to any suitable data transfer and recording form, by means of which text, image, and/or sound-form messages can be transferred to and recorded in the terminal. The terminals 1 are principally mobile stations and particularly digital mobile stations, such as GSM, or UMTS-network telephones, or communicators incorporating more functions. A computer connected to an information network can also act as a receiving terminal 1. The transmitting terminal 1' should also be able to send, and preferably also to form the messages to be sent. The transmitting terminal 1' is preferably a digital mobile station, as the messages are mainly sent through the message service of a mobile network. For example, the short message service (text message service) of a GSM network is one message service of a mobile network that it highly suitable for the operation of the invention. Reception, on the other hand, can also take place, for example, as e-mail through the Internet.

In the example of Figure 1, the system environment shown is based on GSM technology and the terminals 1 and 1' are GSM-network terminals. In this example, the terminal 1' forms a SMS (Short Message Service) message and sends it to the telephone number of the message group comprising the mobile stations 1 and 1'. The SMS message is then transmitted through the GSM network to the short message service centre 2. The short message service centre 2 receives the message and forwards it, on the basis of its telephone number, to the server 3. The server 3 receives the message and performs a

message transmission routine according to the telephone number. According to this routine, the server 3 sends SMS messages to the short message service centre 2 (which may be the same centre 2, from which the messages came), to be transmitted to the other telephone numbers (terminals 1) of the message group, except that which sent the original message (terminal 1'). The content of the original SMS message received from the terminal 1' is copied as the content of the SMS messages to be sent to the terminals 1. Alternatively, the server 3 can also be set to make some specified change, or changes to the content of the message. For example, a group of abbreviations could be programmed into the message service, which would be replaced by the server 3 with a corresponding complete equivalent. Further, the service could include defined variables, which, when they appeared in a message the server 3 would retrieve a value for the variable, which would be placed in the messages to be transmitted to the terminals 1, in place of the name of the variable. In such embodiments, it is possible to arrive at a situation, in which instead of a single SMS message being sent to the terminals 1, two or more SMS messages would have to be sent.

Figure 2 shows a flow diagram of one possible method that can be carried out in the server 3, to implement the message service. The performance of the method starts in block 21 immediately it is detected that a message, directed to a telephone number managed by the server 3, has been transmitted to the server 3. A routine selected according to the destination number of the message is then initiated. In the following, the method shown in Figure 2 is described stage by stage:

***In Block 21,*** the telephone number of the sender of the message coming to the telephone number of the message group is analysed. In this publication, this telephone number of the sender of the message is termed the A number. In Block 21, the A number of the message is compared with a list (the sender group) formed of the numbers of the permitted senders. If the A number is found in the list of permitted senders, i.e. the sender is a member of the sender group, the method is continued to be carried out in Block 22. If, on the other hand, the A number is not permitted, the performance of the method is terminated in Block 27. The list of the message group's list of permitted senders, i.e. the sender group is, in the basic version of the service, formed of the numbers of the members of the

message group, so that all the members of the group (and only the members of the group) are permitted to send messages to the group through the service. In adapted services, the list of permitted senders can also be freely implemented differently. Thus, the method can be used to implement, for example, a service, in which a specified first group is entitled to send messages to a specified second group, with the compositions of the first and second groups differing from each other.

***In Block 22,*** the first telephone number of the telephone-number list of the message group is retrieved. In this publication, the destination number of the message is referred to as the B number. After the retrieval of the first B number, the method moves to Block 23.

***In Block 23,*** the retrieved B number is compared with the A number. If the B number is the same as the A number, the method moves to Block 25. If, on the other hand, the B number and the A number differ from each other, the method moves to Block 24. This check is intended to prevent the message from being sent back to its sender.

***In Block 24,*** the message is transmitted to the B number and the method moves to Block 25. In this case, the term transmitting the message refers to the message being sent, and not to its being delivered as far as the receiving terminal 1. This is because in the method it is normally not reasonable to wait for an acknowledgement that the message really has arrived at the receiving terminal 1, as this would delay the sending of the message to the other members of the group. It should also be noted that, when transmitting the message to the terminal 1, it is preferable to ensure that the telephone number of the message group and not the telephone number of the original sender is stated as the sender of the message. This is so that the recipients can identify the message as having come through the message group and not directly from the sender in question. This arrangement permits the message to be also answered as a group message, through the answer function of a mobile telephone.

***In Block 25,*** the next B number is retrieved from the telephone number list of the message group, after which the method moves to Block 26.

***In Block 26,*** a check is made as to whether all the telephone numbers of the message group have already been processed. This can be done, for example, in such a way that some specific end of transmission character is recorded as the final number in the message group's telephone number list. In that case, a check is made in Block 26, as to whether the B number retrieved corresponds to the end of transmission character, and, if it corresponds, the processing of the list is stated to have finished. If the processing of the list has finished, the method moves to Block 28 to terminate the carrying out of the method. If, on the other hand, the processing of the list has not yet finished, the method moves to Block 23.

***In Block 27,*** the carrying out of the method is terminated and the received message is destroyed.

***In Block 28,*** the carrying out of the method is terminated.

The methods disclosed above are only intended to illustrate particular embodiments of the invention and are in no way intended to delimit other embodiments as being outside the scope of the invention. Thus, the methods disclosed above can be modified in several different ways while, however, remaining within the scope of the protection of the invention.

For example, the check described in Block 23 in the example can be omitted and the message transmitted back to the original sender too. This can even be advantageous if additional operations are added to the transmission of the message, such as the replacement of abbreviations with more complete forms of expression, or the replacement of variables with the values obtained by the variables. In these cases, before the message is transmitted, a method must be carried out, which reads the contents of the message and picks out from it defined abbreviations and variables. If abbreviations and variables are detected, equivalents for them are retrieved from a database or a suitable external service. Further, the retrieved equivalents are included in the message, in the

location determined by the original abbreviation or variable.

In connection with Block 24, it was stated that the telephone number of the message group and not the telephone number of the original sender is preferably marked as the sender of the message. The method can, of course also be implemented in such a way that the telephone number of the original sender is marked as the sender and, if necessary, some other identifier can be included in the message, on the basis of which the recipient can identify the message as having come through the message group. Alternatively, it is also possible to operate in such a way that the message group's telephone number is marked as the sender, but the number of the original sender is included in the message portion of the message. In some services, it is also possible to operate in such a way that the name or pseudonym of the original sender, which has been obtained from the service's database through the identification of the A number, is included in the message portion.

Further, addresses other than telephone numbers can form part of the transmission list. In that case, the message must be converted into a suitable form prior to transmission. In addition, it must be ensured that these other addresses can be processed, for example, in connection with the carrying out of the method according to Figure 2.

The examples described can also be adapted in such a way that the operations of the server 3 are carried out already in the short message service centre 2, so that the server 3 is not necessarily even required. In other ways too, the location or ownership of the server 3 are not of primary importance. The server 3 can be part of the telecommunications operator's system, in which case the telecommunications operator will provide the message-group service. On the other hand, the server 3 can equally well be in the possession of a service operator independent of the telecommunications operator.

The examples described above depict the transmission of message in a message-group service. The following briefly depicts some possible ways of defining such services.

For the original definition of the message-group's setting and for the subsequent

alteration of them, an interface is required, through which the definitions of the service can be operated. Such an interface can be, for example, a Web-based Internet interface. In the case of an Internet interface the founder of the message group can be connected to the server 3 through the Internet, for setting the addresses and other necessary definitions of the message group. Further, definition rights can also be granted to other persons, for example, to all members of the group, either in full or limited, for example, to their own personal information. Corresponding operations, with certain restrictions, can also be implemented through a WAP interface.

A second alternative for making settings is for the settings to be made by the service operator. In that case, the service operator can provide customers with, for example, a service number, which when called connects to service personnel for founding a group or altering settings.

A third alternative for making settings is for the settings to be made through a telephone connection and DTMF signals. In that case, it is possible to operate, for example, in such a way that an already founded message group is set its own update telephone number for the updating of the group's members' own information. In that case, the subscriber calling the update telephone number is identified on the basis of their A number and the new definitions are received as DTMF signals. This makes it possible to conveniently implement, for example, temporary disconnection from the group, or final detachment from the service. In temporary disconnection, after a suitable selection of a voice menu and DTMF, the customer's number is removed from the transmission list, but not from a second member list maintained of the group members. When the group member wishes to join the transmission list again, they can be identified from the member list, after which their number is returned to the transmission list. If, on the other hand, it is wished to make the message-group service open to all, no separate member list is required, instead everyone attempting to connect to the transmission list can be accepted.

A fourth alternative is to update settings with the aid of short messages. In that case, is it possible, for example, to proceed as in the case of the disclosed DTMF alternative by reserving for each group its own updating telephone number, the settings of the service being altered with the aid of messages sent to it. In this way it is easy also to implement

open message groups, which can be joined by simply sending a specified-form message to a given telephone number. In a corresponding manner, it is also possible to leave the message group.

Thus, there are numerous different ways for making and altering settings, which can also be used in parallel in the same service. According to the nature of the message group, it is also possible to require a more formal registration with the list. In that case, only the operator or some person with updating rights for the group could define new members to the group. This makes is possible to reduce the risk of malicious user. In any event, it is possible to exclude malicious users, as the telephone number of the terminal 1' sending a message is always known to the service operator. Thus malicious users can also be prevented from registering with the list in the future, at least if they use the same telephone number.

Claims:

1. A method for implementing a message service with the aid of a telephone network, in which service a message group consisting of at least three network addresses is defined, and in which method

- a message addressed to the group is received, and
- the received message is transmitted to the network addresses defined in the message group,

characterized in that the message is received through a message-group-specific telephone number, which unambiguously defines the message group as the destination of the message.

2. A method according to Claim 1, characterized in that a sender group consisting of network addresses, and which is entitled to send a message to the message group, is defined in the message service, and that before the message is transmitted

- the network identifier of the subscribed who has sent the message is identified,
- a check is made as to whether the network identifier of the subscriber who has sent the message belongs to the defined sender group, and
- the message is transmitted only if the network identifier of the subscriber who has sent the message belongs to the defined sender group.

3. A method according to Claim 2, characterized in that the message group is used as the sender group.

4. A method according to any of Claims 1 - 3, characterized in that the message is prevented from being transmitted back to the network address that has sent the message.

5. A method according to any of Claims 1 - 4, characterized in that the message to be transmitted is a text-form message, for example, an SMS message according to the GSM standard.

6. A method according to any of Claims 1 - 5, characterized in that the network address is a mobile network address, for example, a numerical-form address, i.e. a telephone number.

7. A method according to any of Claims 1 - 6, characterized in that a service charge relating to the transmission of the message is billed to the sender of a message addressed to the message group.

8. A method according to any of Claims 1 - 6, characterized in that a charge refund for sending the message is granted to the sender of a message addressed to the message group

9. A method according to any of Claims 1 - 8, characterized in that a service charge relating to the transmission of the message is billed to the recipient of a message transmitted to the message group.

10. A method according to any of Claims 1 - 9, characterized in that after the reception of a message addressed to the message group and before the message is forwarded to the network addresses belonging to the message group

- the contents of the message are read with the aid of a program, and
- if the message contains commands addressed to the program, the alterations defined by the commands are made to the contents of the message, with the aid of the program.

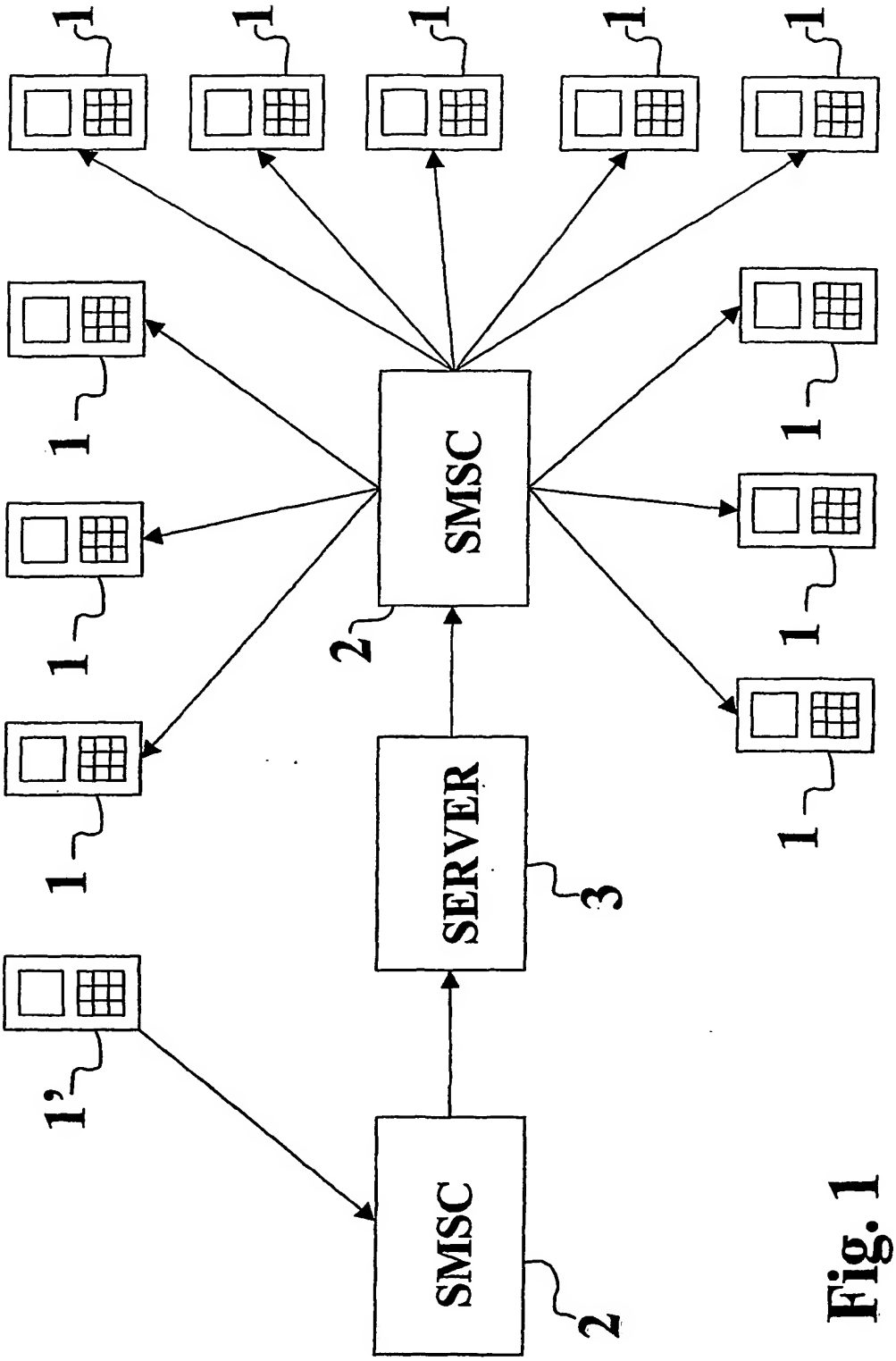


Fig. 1

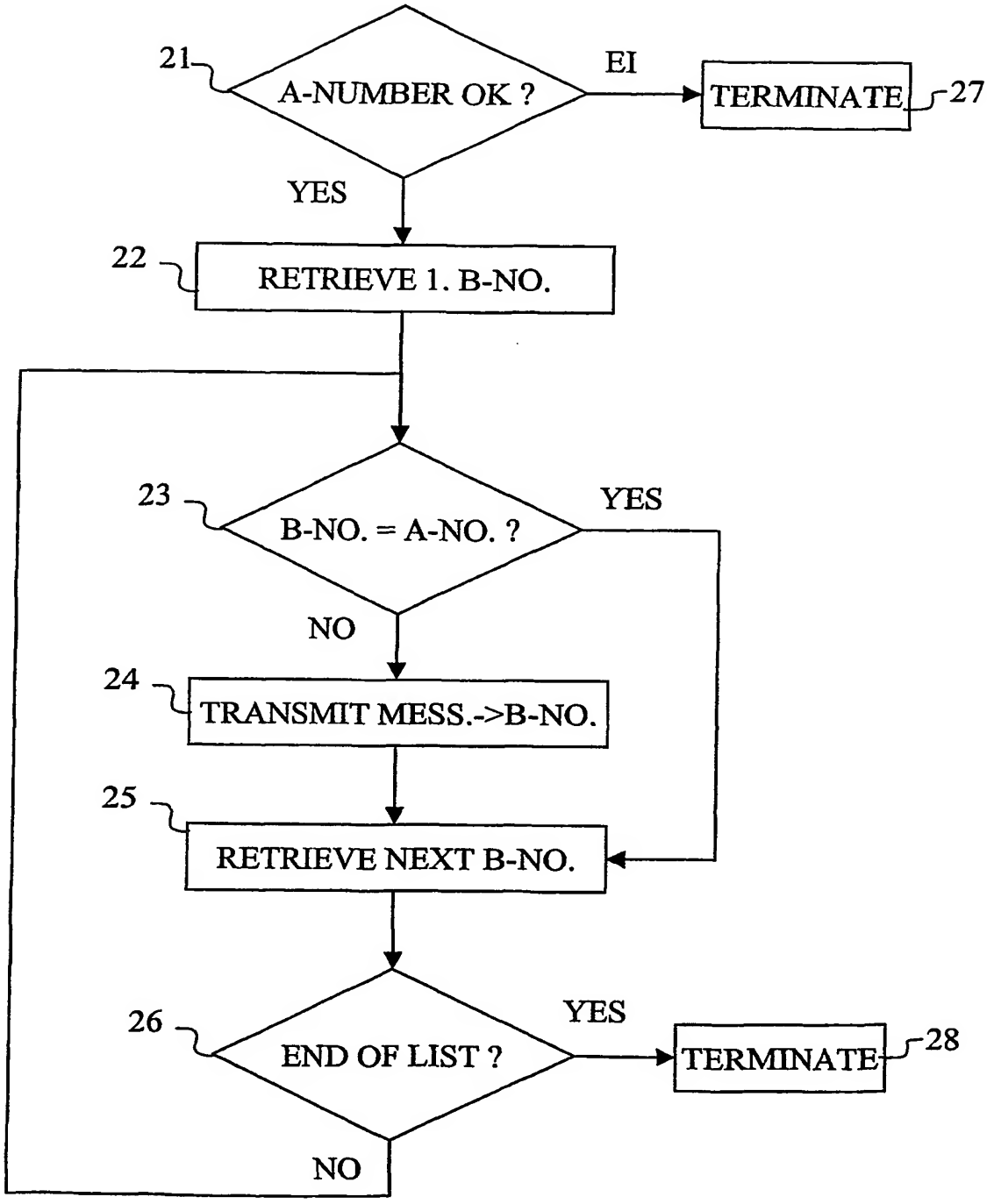
21
A-NUMBER OK ?
EI
TERMINATE
27
YES
22
RETRIEVE 1. B-NO.
23
B-NO. = A-NO. ?
YES
NO
24
TRANSMIT MESS.->B-NO.
25
RETRIEVE NEXT B-NO.
26
END OF LIST ?
YES
TERMINATE
28
NO

Fig. 2

# INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 01/01153

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/22, H04M 15/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5923733 A (WALTER PATRICK BINNS ET AL), 13 July 1999 (13.07.99), column 2, line 15 - line 25; column 3, line 15 - line 25, abstract<br>-- | 1-10 |
| A | WO 0030374 A2 (NOKIA CORPORATION ET AL), 25 May 2000 (25.05.00), page 19, line 10 - line 12<br>--<br>-------- | 4 |

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| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 19 June 2002 | 24 -06- 2002 |
| Name and mailing address of the ISA/<br>Swedish Patent Office<br>Box 5055, S-102 42 STOCKHOLM<br>Facsimile No. +46 8 666 02 86 | Authorized officer<br>Roland Landström/EÖ<br>Telephone No. +46 8 782 25 00 |

Form PCT/ISA/210 (second sheet) (July 1998)

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Information on patent family members

01/05/02

International application No.
PCT/FI 01/01153

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